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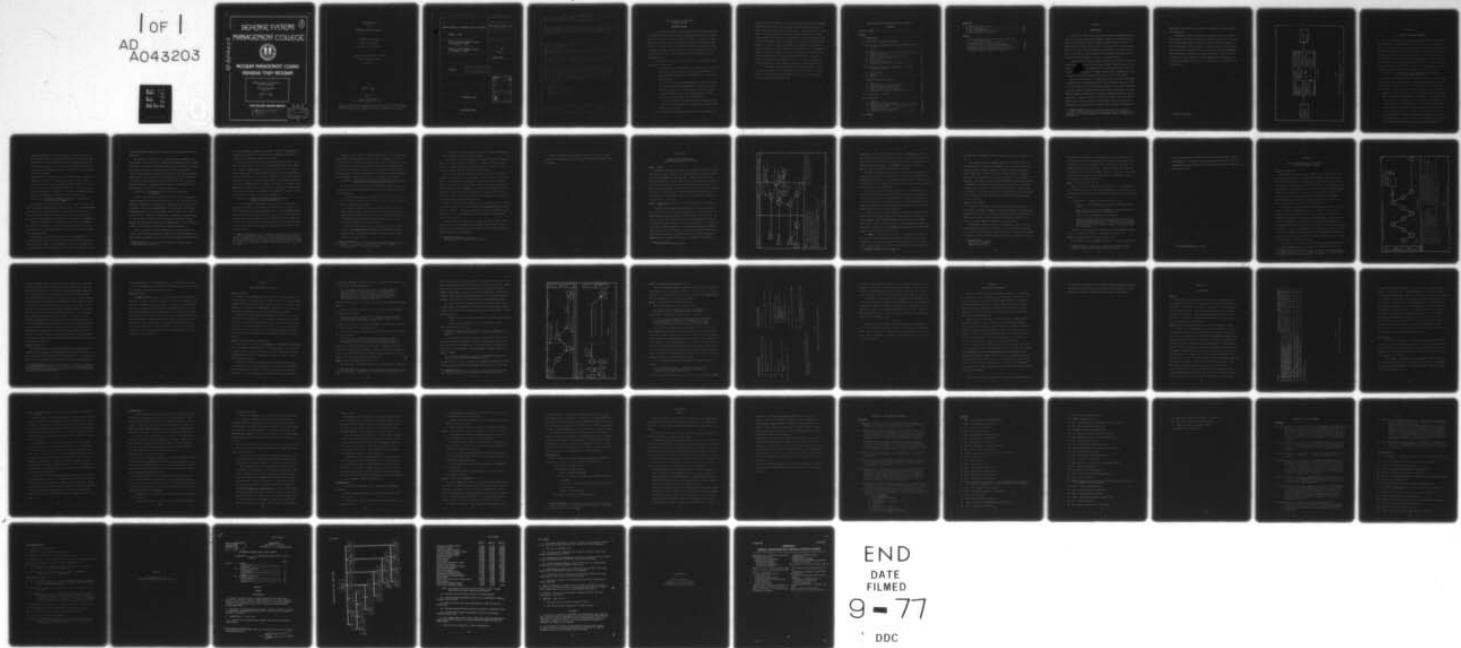
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# DEFENSE SYSTEMS MANAGEMENT COLLEGE



## PROGRAM MANAGEMENT COURSE INDIVIDUAL STUDY PROGRAM

MANPOWER ASPECTS OF INTEGRATED  
LOGISTICS SUPPORT

STUDY PROJECT REPORT  
PMC 77-1

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MANPOWER ASPECTS  
OF  
INTEGRATED LOGISTIC SUPPORT

Individual Study Program  
Study Project Report  
Prepared as a Formal Report

Defense Systems Management College  
Program Management Course  
Class 77-1

by

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May 1977  
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DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE: MANPOWER ASPECTS OF INTEGRATED LOGISTICS SUPPORT

STUDY PROJECT GOALS: To learn and evaluate manpower aspects of ILS planning to insure documented procedures and responsibilities enabling successful materiel fielding.

STUDY REPORT ABSTRACT:

The purpose of this paper is to review and evaluate manpower aspects of ILS. Manpower authorizations are a critical resource, and the basis for personnel procurement, distribution and training.

The nature of the manpower problem is described in terms of five situations where manpower problems could (or did) effect system deployments. The current manpower planning system is then described and evaluated for specific provisions guarding against the cited problems.

The study finds significant disconnects between the system developer and the Major Army Command (MACOM) logistician, and between the command logistician and the command force developer. Specific recommendations are offered for relevant regulations, including AR 70-17 (add MACOM planning input); AR 700-127 (specify MACOM planning requirement, upgrade pre-deployment assessments, and add a post-deployment assessment program); and AR 310-49-1 (clarify procedures for manpower planning and documentation). The study may serve as a reference for manpower planners and logisticians in program offices and field command staffs.

SUBJECT DESCRIPTORS:

- Manpower
- Personnel and Training
- Integrated Logistics Support
- Materiel Fielding Plans
- Force Planning

NAME, RANK, SERVICE Clarke L. Neal, LTC, USA	CLASS PMC 77-1	DATE May 1977
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MANPOWER ASPECTS OF INTEGRATED  
LOGISTICS SUPPORT

EXECUTIVE SUMMARY

1. This report describes a review and evaluation of manpower aspects of Integrated Logistics Support (ILS). "Personnel and training" is recognized as one of nine ILS areas; however, the implicit requirement for manpower authorizations - as a prerequisite for personnel procurement, distribution, or training - is not always understood. This study was encouraged by manpower planning problems observed in the field (through personal experience), the increasing cost of manpower, and its constant sensitivity and limited supply.

2. The study is organized in three parts: the problem, the current system, and an evaluation.

a. The nature of the problem is discussed in terms of five situations where manpower planning problems were observed which (or could have) impacted new system deployments or related support decisions.

b. The current system for manpower planning is examined, with the focus on assuring adequate manning of a Maintenance Direct Support Unit (DSU). The system is traced from initial skill-need identification to eventual fielding and post-fielding assessments for each MACOM. (Major Army Command).

c. The review tried to identify regulatory deficiencies which may be attributable to one of the cited problems, and which may lead to its recurrence.

3. In examining the manpower planning system, it was observed that

there are critical disconnects in the ILS manpower planning process: °command logisticians don't talk to force planners or understand force planning procedures (which are key to manpower adjustments); °force planners don't always update and document authorization rationale (MTOE, Part I) per AR 310-49; °pre-deployment system reviews are incomplete concerning manpower authorizations (and deployment planning as a whole); °the Materiel Fielding Planning process, to be added to AR 700-127, needs to be strengthened - particularly concerning Major Army Command ILS planning responsibilities. Recommendations have been offered for improving the regulatory guidance in these area, and for establishing an ILS, post-fielding assessment program. A sound, ILS feedback system is seen as a significant area of potential improvement for providing HQDA with a regular basis for evaluating overall ILS planning.

4. Recommendations are provided for specific regulations to assist proponent consideration. This report should also prove useful as a reference for program office and field command managers involved with manpower planning or materiel fielding planning.

MANPOWER ASPECTS OF INTEGRATED LOGISTIC SUPPORT

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## CHAPTER I

### INTRODUCTION

The purpose of this paper is to review and evaluate manpower aspects of Integrated Logistic Support (ILS) planning. Manpower, as presented in this paper, is the number of personnel authorized (or allocated) to a unit or agency within the Army. (See Appendix A for abbreviations and definitions.) Hence, it is implicit within "Personnel and Training" - one of the nine elements of ILS; and it is the prerequisite for personnel procurement, distribution and training necessary to support a system acquisition.

The importance of a review of this particular ILS element was identified through recent observations of Direct Support Maintenance operations in the field: major workload imbalances were continual problems in the maintenance of major equipment and combat readiness (7)<sup>1</sup>. Manpower in the Army is certainly an expensive resource always in critically short supply.

The focus of this study is on the Maintenance Direct Support Unit (DSU) - although many of the observations will be more generally applicable. The DSU is the principal unit responsible for support of a new system, including its direct support maintenance, repair parts supply, modification work order (MWO) management and (DSU level) installation, technical assistance and the evaluation of support problems. This unit is considered key to the deployment success of the new system - and its manpower needs are sensitive to a wide-range of system types (e.g. vehicles, radios, weapons, or generators)

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<sup>1</sup>This notation will be used throughout the report for sources of quotations and major references listed in Appendix B. Page numbers, where applicable, will be shown following the reference number and a semicolon, e.g. (25; 12).

depending on its mission and the density of equipment in its assigned area of responsibility.

The method of study and presentation is shown graphically in Figure 1. The nature of the problem is described in Chapter II in terms of five situations in which user manpower problems were significant to some aspect of system developments and deployments. The current system for manpower planning is described in Chapters III-VI, including program office and MACOM<sup>1</sup> actions, deployment planning, and feedback procedures. The evaluation in Chapter VII was then conducted to identify whether current procedures are sufficient to reasonably guard against the recurrence of the problems cited in Chapter II.

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<sup>1</sup>Major Army Command.

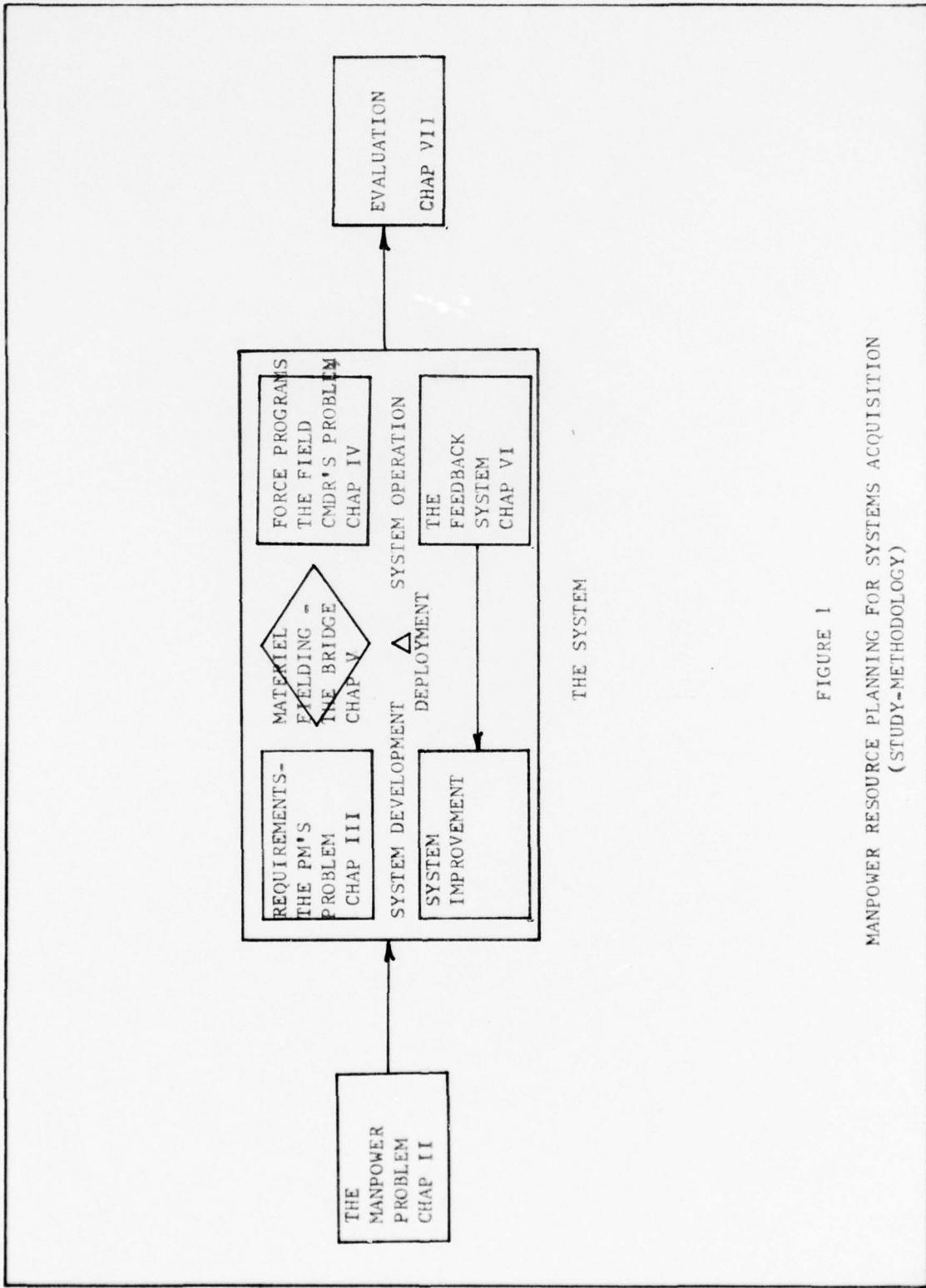


FIGURE 1  
MANPOWER RESOURCE PLANNING FOR SYSTEMS ACQUISITION  
(STUDY-METHODOLOGY)

## CHAPTER II

### THE NATURE OF THE MANPOWER PROBLEM

In this chapter, five situations are described where manpower problems were a potential (or actual) impact on some aspect of system development.

The range of situations includes major systems, a commercial vehicle system, system components (maintenance concept change), and the general manpower sufficiency of a DSU. The situations described are real, although system identifications have been deliberately omitted because the lessons learned staffing are not yet completed and/or the results have not been released for general distribution. The reader is referred to the referenced sources in each case for further information concerning specific situations.

#### SITUATION #1: DEPLOYMENT OF A MAJOR VEHICLE SYSTEM MODIFICATION TO U. S. ARMY EUROPE (USAREUR) (8)

Modified systems were approved for deployment to Europe in January 1975, and were subsequently deployed. After problems were observed in June 1976, a study team was tasked to identify lessons learned from that deployment. Two particular aspects of the study team's findings are significant here:

•Personnel - Specially trained personnel (mechanics) arrived in theater about one year before deployment of the equipment. Many rotated, leaving a shortage in the spring of 1976 and causing a three month delay in a final segment of system deployment. The consensus, among personnel contacted by the study team, was that the number of these mechanics currently authorized for the operating units is barely adequate for peacetime, and that the number is inadequate for wartime. (Comment: Although the report recognized the need and recommended Military Occupational Specialty (MOS) training and assignment coordination with

deployment schedules to assure availability of skilled personnel, it did not address the need to review and possibly increase manpower authorizations. This may indicate that the ILS element "personnel and training" was connoted only as a personnel distribution and training problem, and/or that there was no way to influence an increase in manpower authorizations!)

<sup>o</sup>Logistics Support Planning - There was no formal document covering the deployment to Europe. The lessons learned report observed that the current Materiel Fielding Plan (MFP) requirement (see Chapter V) did not then exist, and that USAREUR should develop a coordinated mission support plan (MSP) in accordance with AR 700-120. (USAREUR recognized the need and subsequently published an MSP in February 1977.)

SITUATION #2: DEPLOYMENT OF COMMERCIAL VEHICLES TO EIGHTH UNITED STATES ARMY (EUSA) (KOREA) (7)

The deployment was long scheduled for the fall of 1976 to replace more than one thousand overage military vehicles. Tank Automotive Command (TACOM) had published an excellent fielding plan. The units had been notified, support units had requisitioned repair parts, tools, and publications, and New Equipment Training (NET) was scheduled to be conducted by a TACOM team.

During the deployment, there appeared to be no significant problems. The transition from the old to the new vehicles was executed at three de-processing points, the NET teams were effective, and user reception to the new equipment was good.

But there were some units which received the new equipment prior to their NET training. This was critical because of certain warranty and maintenance sensitive features of the equipment. And as late as December 1976, technical channels in Korea were still working to clarify whether the number

of initial Authorized Stockage List (ASL) lines should be ninety or one hundred forty.

The problem was that there was no command plan for deployment of the new equipment. There was a short command Standing Operating Procedure (SOP) for trading old for new vehicles, and which gave unit priorities for turn-in. The training program was coordinated by separate letter and there was a series of planning messages (approximately sixteen) which were sequentially amending each other. But there was no EUSA plan citing the overall scheme for repair parts, personnel and training, publications, etc. At least it was not distributed to the DSU level where planning was equally uneven and handicapped by the lack of the internal command plan.

SITUATION #3: EARLY DEPLOYMENT OF A MAJOR ELECTRONIC SYSTEM TO EUROPE (5)

An early 1976 inquiry into maintenance problems within a USAREUR sub-command identified manpower authorizations as one of the major problem areas. Thereupon, USAREUR quickly identified the required number of spaces (N), and informally coordinated with HQDA(ODCSOPS)<sup>1</sup> to add the space requirement to USAREUR's allocation in the Command Budget Estimate (CBE) in July 1976 for FY 77 and FY 78. USAREUR later submitted the documented requirement, which had now been reduced to N-21 (after more detailed requirement analysis). Because the CBE was already submitted, the ODCSOPS took no initial action to withdraw the now excess 21 spaces from the USAREUR allocation.

Later in the summer of 1976, with personnel in school scheduled to support an early (FY 77) deployment to Europe, the Project Management Office (PMO) suddenly discovered there were insufficient manpower authorizations in

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<sup>1</sup> Headquarters, Department of the Army, Office of the Deputy Chief of Staff for Operations and Plans.

the gaining command to support the deployment. After the CBE sequence described above, the PMO sent a representative to ODCSOPS to obtain help in establishing the necessary manpower authorizations.

Note the magnitude of the problem: personnel were already in school. The FY 77 budget update, with the FY 78 budget estimate, was already submitted. A special command manpower authorization review was just completed without recognition of the spaces needed to support the system development, even though the system was to deploy in less than one year. Without an extraordinary effort to arrange the needed spaces, the forthcoming deployment was doomed to fielding problems or delay. Fortunately, the twenty-one excess spaces in the USAREUR allocation were sufficient to meet the immediate need, and were therefore earmarked by HQDA (in the USAREUR FY 77 manpower authorization update) for support of the system deployment.

SITUATION #4: CHANGE IN MAINTENANCE CONCEPT FOR SELECTED COMMUNICATION-ELECTRONIC MODULES (7)

In July 1976, maintenance units in Korea received an EUSA message announcing the subject policy change to be effective in four months. The policy required DSU's to perform component repair on the designated modules which had heretofore been performed at the depot level as part of the DX-W<sup>1</sup> program; and the new DSU mission was to be accomplished within current resources. There had been no prior communications on this subject with these units; and there was no initial guidance on workload, priorities, or other planning details.

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<sup>1</sup>Direct Exchange-Wholesale is a special C-E supply and maintenance program in which unserviceable modules were mailed from DX-W control points direct to the CONUS depot. On receipt of the module, the depot notifies the National Inventory Control Point (NICP) where a Materiel Release Order (MRO) is issued for the "exchanged" serviceable module, which the depot then ships to the DSU.

Component repairs generally require a higher skill level than the module inspect-and-replace maintenance functions normally performed at the DSU.<sup>1</sup>

The repair time standards, module density, special tool requirements, as well as requirements for special personnel skills and repair parts were unknown.

Until these were defined, the impact of the new mission on customer electronics equipment could not be predicted. After these questions and problems were documented to higher headquarters, the requirement was withdrawn.

SITUATION #5: NON-DIVISIONAL DIRECT SUPPORT MAINTENANCE UNITS IN EUSA OPERATING WITH QUESTIONABLE MANNING LEVELS (7)

In 1976, in Korea, in two separate DS Maintenance Battalions, there was concern that workload exceeded manpower authorized and available in several functional areas.

<sup>0</sup>In one maintenance company, automotive backlog exceeded one hundred vehicles, and despite some improvement in the first months of 1976, the unit commander was replaced.

<sup>0</sup>In two other companies, there were periodic backlog problems in certain commodity groups, and more on-going problems in the C-E and TMDE<sup>2</sup> commodity areas. Personnel in these companies were also required to perform non-direct support maintenance functions (e.g. end item supply and Cannibalization Point operations).

<sup>0</sup>Limited supervisory manpower at the battalion level led to particularly serious supply management problems, including reconciliation problems with the theater supply support activity (which was not yet resolved at the end of 1976).

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<sup>1</sup>App B, AR 750-1, prescribes DSU repair only when "the repair can be accomplished . . . with easy to use and interpret tools and TMDE".

<sup>2</sup>Test, Measurement, and Diagnostic Equipment.

<sup>o</sup>All of the cited units were operating at or below Authorized Level of Organization (ALO) 5, or 60% strength.

No doubt other factors contributed to the capability problems indicated here: e.g. supervisory quality (the change of command in the one unit was effective), repair parts supply and availability of key non-commissioned officers. But the question of manning adequacy existed.

Efforts to determine the adequacy of manning in the DSU's were handicapped by a key missing link: documentation of the rationale for the current staffing. It did not exist. Manning is proportional to mission, and the DSU's - at 60% strength - were presumably supporting something less than a full TOE<sup>1</sup> mission. Yet the MTOE<sup>2</sup> part I read "no change", meaning full TOE capability. Force plan updates were required at least twice yearly - but there was no requirement to rejustify current strengths, and again there was no baseline manning rationale (documentation).

(Comment: Support manning problems in a DSU are significant to a planned system deployment to that area of operations whether or not new personnel skills are involved. An existing capability shortfall, in the DSU, for that commodity could handicap deployment and prejudice customer satisfaction against the new system.

In the situation cited here, it is apparent that there had been no detailed analysis of the MTOE manning requirements for three DSU's in more than a year, notwithstanding normal workload variance from relocating customers and issuance of new equipment.)

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<sup>1</sup>Table of Organization and Equipment.

<sup>2</sup>Modified Table of Organization and Equipment.

So this is the nature of the manpower problem. In the next chapter, the system for manpower planning from the Program Managers' viewpoint will be examined.

## CHAPTER III

### SYSTEM MANPOWER REQUIREMENTS THE PROJECT MANAGER'S (PM'S) PROBLEM

#### Part A. General

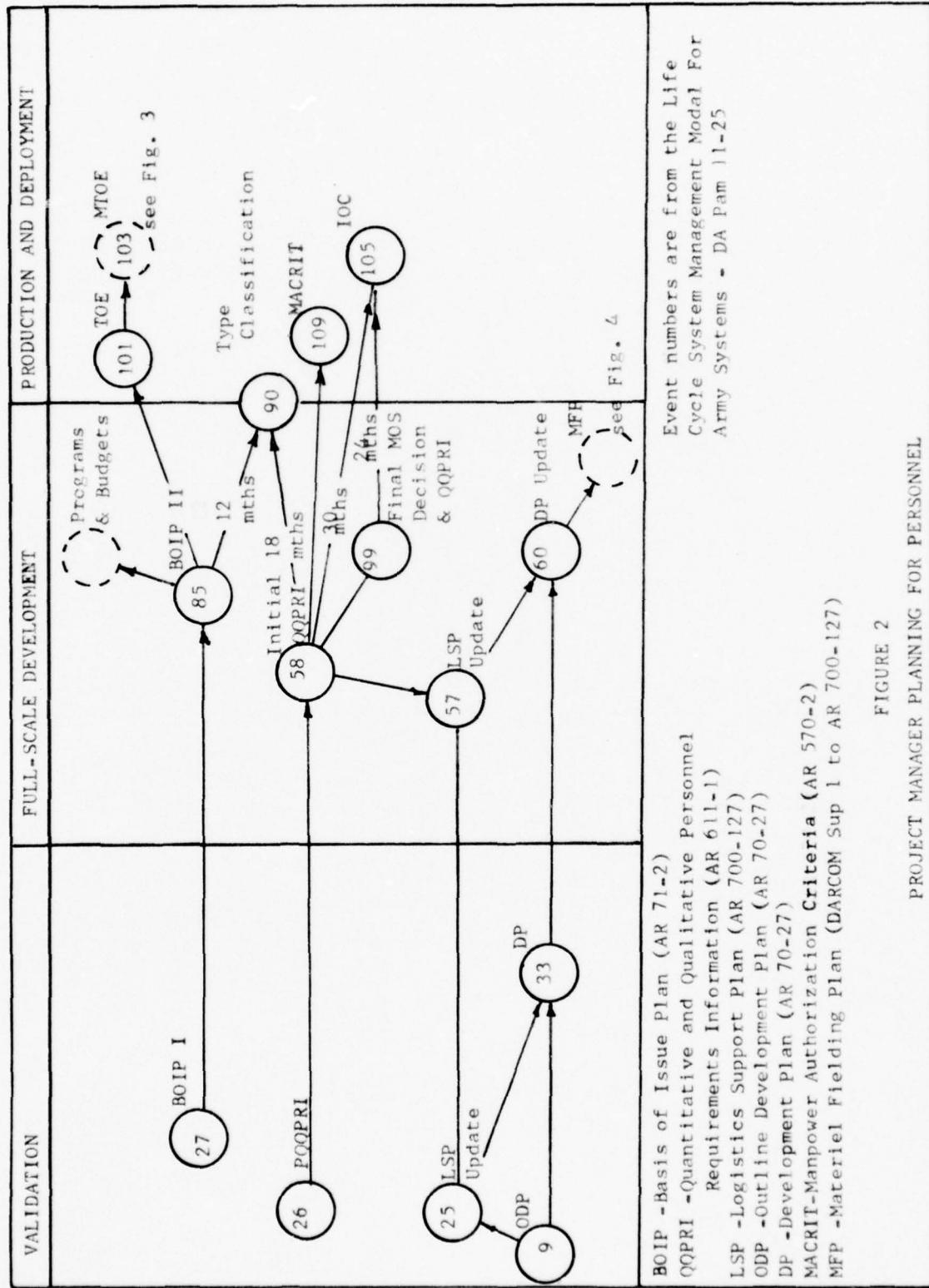
Planning for the manpower needs of a new system is an intricate process involving the materiel developer, the combat developer, the Military Personnel Center (MILPERCEN), and the HQDA Staff. The Program Manager is the "Leader-of-the-Band". He must orchestrate the identification and planning for the necessary MOS (Military Occupational Specialty) requirements to insure, for each new system, that the necessary skills are provided to operate and support the system, and that doctrinal/organizational concepts and the training plan are synchronized. The key planning documents and events involved are shown in Figure 2.

#### Part B. Quantitative and Qualitative Personnel Requirement Information (QQPRI) (19)

The "MOS Decision" identifies needed personnel skills with specific MOS categories which are the basic personnel system control elements. The QQPRI documents the data necessary to support that decision. Based on the Logistic Support Analysis (26), the Materiel Developer (DARCOM)<sup>1</sup> prepares the preliminary QQPRI (PQQPRI) during the Validation Phase. The PQQPRI includes task and skill information, Annual Maintenance Man-Hours (AMMH) by MOS for each level of maintenance, a listing of duty positions required for operations and support, suggested MOS', and other pertinent information. DARCOM forwards the QQPRI for coordination to TRADOC who indorses it to

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<sup>1</sup>Development and Readiness Command.



- BOIP - Basis of Issue Plan (AR 71-2)
- QOPRI - Quantitative and Qualitative Personnel Requirements Information (AR 611-1)
- LSP - Logistics Support Plan (AR 700-127)
- ODP - Outline Development Plan (AR 70-27)
- DP - Development Plan (AR 70-27)
- MACRIT-Manpower Authorization Criteria (AR 570)
- MFP - Materiel Fielding Plan (DARCOM Sup 1 to 4)

Event numbers are from the Life Cycle System Management Model For Army Systems • DA Pam 11-25

FIGURE 2  
PROJECT MANAGER PLANNING FOR PERSONNEL

MILPERCEN with basis of issue and training data. MILPERCEN then develops and coordinates the MOS decision which becomes final at event 99 (Figure 2). All new MOS decisions are consolidated every six months and published in a TOE Consolidated Change Table by MILPERCEN for worldwide distribution.

Part C. Table of Organization and Equipment (TOE) (17)

The TOE is the document which records the full wartime allowance of personnel and equipment for a given Army unit. There are other requirement documents, such as Tables of Distribution Allowances (TDA's), which must also be considered; but for simplicity in this paper, discussion will be restricted to TOE personnel requirements.

The TOE is based on organizational doctrine, and is engineered to provide a balance, for each unit, among mission, capability, and resources. Each TOE is designed for a "type" environment. The TOE is the basis for peacetime unit personnel structures, but does not authorize peacetime personnel and equipment levels: that function is performed by a Modified TOE (MTOE) which will be discussed in Chapter IV.

Training and Doctrine Command (TRADOC) is the Army proponent for TOE's. Draft TOE's are constructed based on the OQPRI and serve as backup to the OQPRI decision. After type classification, event 90 (Figure 2), TRADOC takes action to update the current TOE's. (Personnel changes to TOE's are subsequently broadcast via the MILPERCEN channel described in Part B above.)

Part D. Basis of Issue Plan (BOIP) (15)

The BOIP is the vehicle used in the materiel acquisition process as the reference for the planned organizational placement of a new item of equipment in the various organizational requirements documents (e.g. TOE, TDA<sup>1</sup>). The plan covers TOE level 1 (100 per cent wartime requirements) for

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<sup>1</sup>Table of Distribution and Allowances.

the new item of equipment and other applicable equipment and personnel changes.

There are two issues of the BOIP. BOIP I is an initial estimate for planned changes in TOE based on the PQQPRI. It is coordinated with the Required Operational Capability (ROC) for approval during the Validation Phase. BOIP II is a complete plan projecting distribution of equipment (with associated personnel and ancillary equipment) into all requirement documents. This plan is submitted to HQDA (ODCSOPS) by TRADOC twelve months in advance of the scheduled type classification standard date of the new equipment item. The BOIP II is used by force developers at HQDA, by logistic planners, by the combat developer for revising TOE, and by major commands for revising TDA, and other authorization documents after Type Classification (TC) standard.

#### Part E. Cost Estimates

The COA<sup>1</sup> is responsible for the Army's Cost Analysis Program (11). COA develops Independent Parametric Cost Estimates (IPCE) and prepares comparative analysis between the IPCE and Base Cost Estimates (BCE) prepared by DARCOM. Cost guides have been prepared for each major category of life cycle costs (LCC): R and D<sup>2</sup>, investment, and O and S<sup>3</sup> (33).

The principle handicap to O and S cost estimating, which is the area in which manpower costs must be projected, is the absence of an effective O and S cost reporting system. Efforts are begun to establish such a system, in support of OSD policy and the significance of O and S costs to the over-

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<sup>1</sup>Comptroller of the Army.

<sup>2</sup>Research and Development.

<sup>3</sup>Operation and Support.

all system LCC (6) (38) but its development will take considerable time. Hence, current estimates are performed only on selected systems and involve a great deal of research and subjectivity. For manpower costs, full TOE estimates are used as the worst case. Coordination with user commands is not involved, for the level of accuracy attained. There is also, reportedly, no effort to communicate cost estimating data to the MACOM's<sup>1</sup> for use in their budgeting for OMA<sup>2</sup> funds. (6)

Part F. Development Plans (DP) (14)

This is the Project Master Plan for Army systems. It is preceded by the Outline DP for entry into the Validation Phase, and it serves as the primary data source for the Decision Coordinating Paper (DCP) and other decision documents.

Manpower aspects are entered in the DP in several forms -

Part II - Systems Requirements and Analysis, includes the BOIP status;

Part III - Plans for System Development, includes the Financial Plan, including O and S cost projections;

Part V - Plan for Personnel and Training; and

Part VI - Plan for Logistics Support covers all aspects of ILS including personnel and training. (There appears to be some potential for redundancy with Part V.) The Logistics Support Plan (22), prepared as a stand alone document, is used as the source for this section.

The DP is the starting point for preparation of the Materiel Fielding Plan to be discussed in Chapter V. (See Figure 2, event 60.)

Part G. Manpower Requirement Criteria (MACRIT) (20)

The staffing guide for TOE/MTOE is AR 570-2. The criteria are given,

<sup>1</sup>MACOM - Major Army Command e.g. USAREUR, EUSA, FORSCOM, TRADOC.

<sup>2</sup>Operation and Maintenance Army (OMA) Appropriation.

for applicable positions, based upon QQPRI data including AMMH<sup>1</sup>. Updating of the MACRIT is a key output of the systems acquisition process, and the TOE personnel changes generated for the new system should be consistent with the MACRIT criteria.

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<sup>1</sup>Annual Maintenance Man Hours.

## CHAPTER IV

### FORCE PROGRAMS, BUDGETS AND OPERATIONS: THE FIELD COMMANDER'S PROBLEM

#### Part A. Force Programs

In contrast to the full wartime requirements for personnel and equipment which are documented in the TOE and BOIP (refer to Chapter III above), the field commander operates within peacetime constraints. His subordinate units are generally operating below full strength in an oft-changing environment, and with a complex assortment of manpower resources including TOE/TDA, military and civilian, and U. S. and, if overseas, local nationals. For example, in Korea (EUSA), three units are organized under TOE 29-208H, Maintenance Company, Rear, Direct Support (see Annex C.). In 1976, these units operated at ALO 5, or 60% of full TOE strength.

The process for maintaining and updating force authorizations for units within a command is diagrammed in Figure 3. Basically, from the time a command knows the specific schedule for distribution of the new item of materiel, the force plan (troop list)<sup>1</sup> must get updated; the force decision is then documented in the Army Authorization Document System (TAADS); and the personnel and logistics systems must react to the adjusted authorizations for each unit. This is a long process: the timeline shows a total of fifteen months. Expediting may compress the schedule somewhat; conversely, net command manpower increases within any category (civilian, military, officer, or enlisted) will complicate the process.

A key question, for both the Program Manager planning a system deployment and the MACOM logistician, is whether the supporting DSU's will be

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<sup>1</sup>Shows the distribution of manpower, allocated by HQDA, among MACOM organizations. MACOM troop lists are submitted to HQDA for approval/update on a continuing basis as changes occur or are projected.

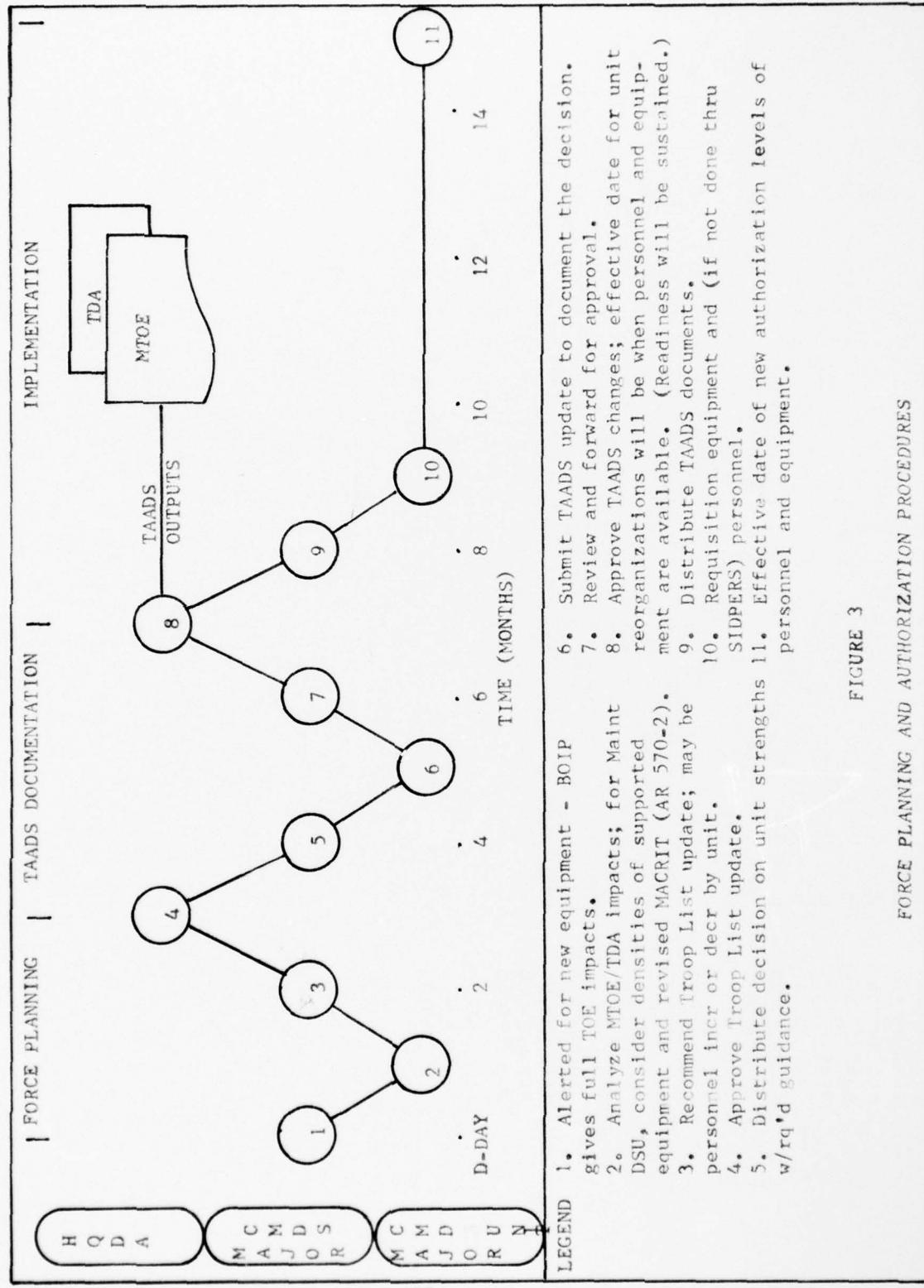


FIGURE 3  
FORCE PLANNING AND AUTHORIZATION PROCEDURES

adequately staffed (and/or trained) when the new system arrives. Consider the DSU at Annex C staffed at five officers, one warrant officer, one hundred fifty eight enlisted (vs full TOE of seven officers, five warrant officers, and 273 enlisted), or 58% strength. Presumably, the manning (MOS types and quantities) is based on the specific density of equipment supported by commodity in accordance with the MACRIT (AR 570-2). Note that this distribution will not be identical to any other DSU in the ARMY. The variance will be greatest among non-divisional DSU's, depending on the specific mix of units and equipment in their area of operations. In this example, the new system may be distributed other than on a 1:1 basis with other equipment, thereby changing the support density; there may be a newly required DSU MOS addition or substitution; or there may be other planned command actions which will have even greater impact on the DSU manning during the time frame of interest. In any case, the projected manpower should be reviewed - in detail - against the projected capability/mission assignment; and the review should take place in sufficient time to permit force plan and TAADS updates as required.

#### Part B. Budgets (9)

Each MACOM budgets for various OMA<sup>1</sup> categories. The Command Budget Estimate (CBE) is submitted each summer with budget and manpower requirement data for two periods: the "current" fiscal year (FY) which is an update for the FY beginning 1 October after Congressional Enactment and Department of

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<sup>1</sup>Operations and Maintenance, Army Appropriation - funds such categories as civilian personnel pay, supplies, and travel. Military Personnel, Army (MPA) Appropriation includes military personnel pay and is budgeted directly by HQDA based on MACOM manpower data.

Defense Apportionment, and the "budget" year, which begins one year hence.

For a forthcoming system deployment, the CBE dollar and manpower budgets should include the necessary manpower resources.

#### Part C. Operations

All MACOM resource gathering is to support operations - those training, logistics, and other activities necessary to maintain combat readiness. At the time of deployment of a new equipment item to any area of operations, each unit is fully employed, and energies coordinated to support the phasing of new equipment (in) and old equipment (out) require timely diversion from other activities. Hence, careful planning is necessary within the program office and the command to minimize the impact of this transition; and interpersonal skills and teamwork are required among all participants to cope with the inevitable last minute adjustments needed to insure the successful fielding. The actions which comprise planning for deployment are discussed in the next chapter.

## CHAPTER V

### MATERIEL FIELDING - THE BRIDGE

#### Part A. General

Planning for the introduction of a new system into each MACOM is an intricate process. Decisions need to be made on distribution dates; actions required to support deployment need to be identified; and a detailed, time-phased plan is needed to show DARCOM/MACOM responsibilities leading to the final materiel deployment to the MACOM, and operation thereafter.

Although the system deployment planning process itself is not a subject area unique to manpower aspects of ILS, manpower planning will also break-down if any of the "general" support plans should have problem areas. With this view, the basic ILS regulation (AR 700-127), two approaches currently documented for system distribution planning, and the reviews scheduled to verify logistics supportability prior to deployment are addressed in this chapter.

#### Part B. Integrated Logistics Support (ILS)

AR 700-127 (22) is the Army's implementation of DODD 4140.35, "Development of Integrated Logistics Support for Systems/Equipment". Although ILS has been a concept for some time, many of the current procedures are newly prescribed in the April 1975 publication of the AR, and hence are still in their "shakedown" period.

In the AR, the "Plan for Logistics Support (LSP) (22:2-0) is given as the basic format to be used as input for several development program documents including the Development Plan (DP) and the Decision Coordinating Paper (DCP). A different emphasis is described for the LSP for each life-

cycle phase. Pertinent to materiel fielding is the stated LSP objective for the Production and Deployment Phase:

". . . to evolve Sec VI (of the DP) into a plan describing all logistics actions required to receive the materiel system from production; deploy it within the Army . . . and support it logically. Sec VI will consolidate all logistics information required by Army regulations concerning the production and deployment of the materiel item" (22; 2-3)

This information is then to be available for review at the Production Decision Review.<sup>1</sup>

The LSP includes the personnel and training aspects of the logistics support program, including

"an up-to-date table summarizing total manpower resources required to operate, maintain and support the programmed system through the first ten years of operation." (22; D-1)

As there is no reference to a MACOM responsibility for input this appears to be totally oriented on the QQPRI/BOIP data.

The LSP is supported by a Logistic Support Analysis (LSA). (22; 1-3) (26)

The LSA is intended

"As the interface between materiel design and support planning . . . the LSA is the single logistic analytical effort used to define support criteria and support system requirements" (22; 1-3)

An LSA file is to be maintained, to include data on AMMH, personnel, and skills. (The LSA covers the development support functions thoroughly, but there is no specific reference to a MACOM or area of operations; hence it is apparent that MTOE manpower data is not included.)

#### Part C. Major Item Distribution Planning (21)

The objectives of distribution planning for newly adopted and modernized

<sup>1</sup>AR 750-1 (23) also describes a Maintenance Support Plan (MSP) for new Systems. According to the DARCOM Sup 1 to AR 700-127, the LSP replaces the MSP.

items of equipment include the provision for approved plans alerting all commands regarding their introduction within the next three fiscal years. These plans are called Major Item Distribution Plans - Category I (or MIDP I)<sup>1</sup>.

DARCOM assembles MIDP I plans in book form for distribution to appropriate commands. Approximately nine-twelve months prior to the initial delivery of equipment from production, the Cat I item will be redesignated as Cat II.

Cat I plans cover the entire production from the first fiscal quarter of anticipated deliveries through the last year in which deliveries are projected, as indicated on the approved AMP. These plans are intended to provide planning data for:

°Establishing training programs for maintenance and operator personnel.

°Preparing and publishing training literature and manuals.

MIDP I special remarks will show:

"availability schedule of TM's, repair parts, . . . qualified operating and maintenance personnel . . . for each major command." (21;4-1)

(It is unclear how the personnel data is feasible because this is the first notice given to the MACOM of a specific delivery schedule, and only now can he assess his personnel (and other) requirements for the projected time frame.) From the MIDP I, the MACOM prepares a mission support plan (MSP) to provide

". . . a basis for developing support list allowance cards (SLAC) and listing to support the deployment." (21;9-1)

As shown in the top section of Figure 4 the DARCOM NICP prepares the support list from the MSP in time to enable MACOM requisitions not later than one

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<sup>1</sup>MIDP II plans cover the distribution of current and projected inventory items; MIDP III plans cover the phase-out of nonacceptable items.

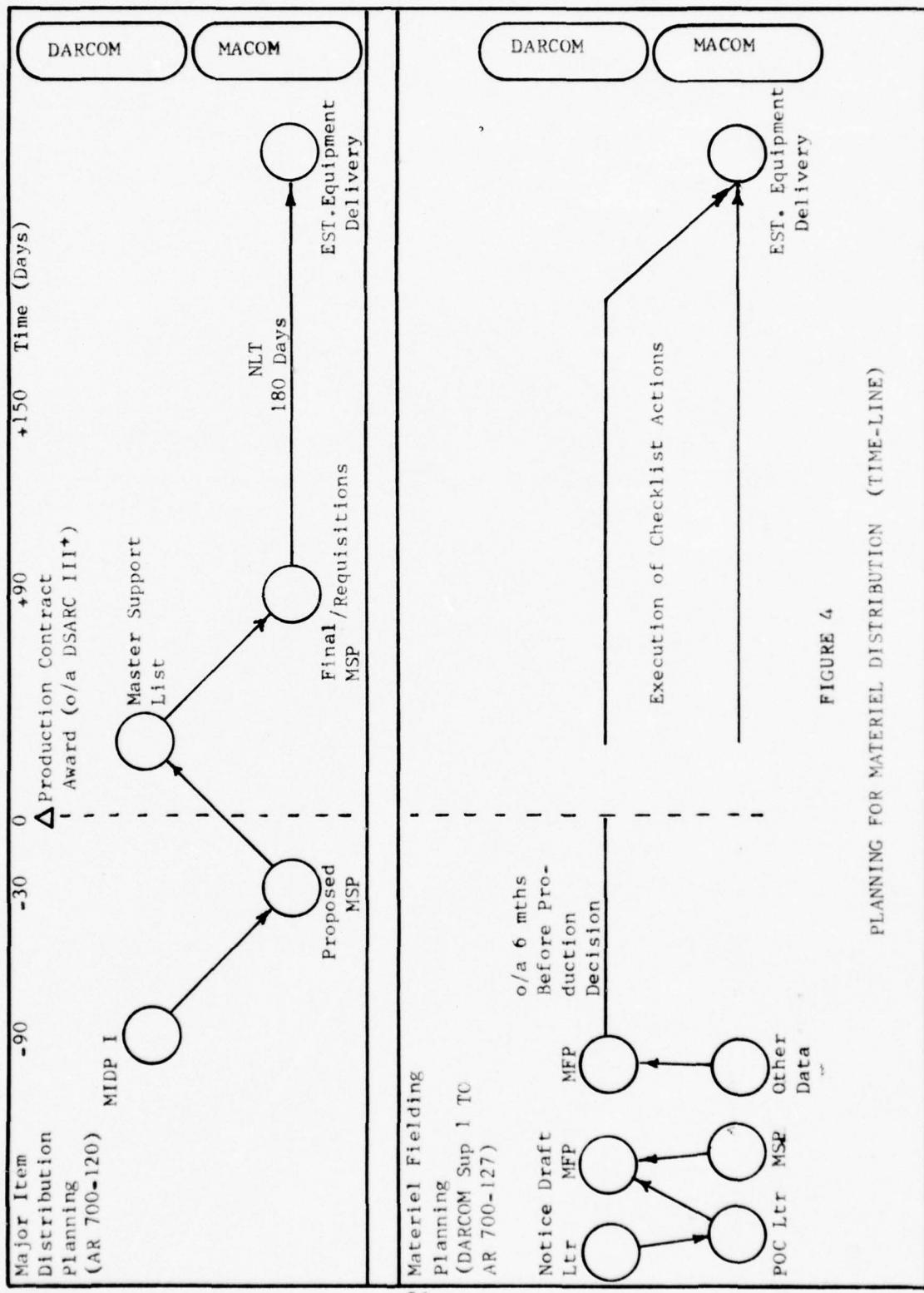


FIGURE 4

PLANNING FOR MATERIEL DISTRIBUTION (TIME-LINE)

hundred eighty days before equipment delivery.

Hence, AR 700-120 provides for a MACOM to receive a specific distribution schedule, and for his input to support initial provisioning. This regulation does not address either internal MACOM planning or other MACOM/DARCOM planning requirements for a new system deployment.

Part D. Materiel Fielding Planning (MFP) (24)

The Materiel Fielding Plan is described as the

". . .the complete deployment plan for all development, non-development and major product improvement items" (28)

Based on the system-oriented Development Plan, the MFP is

". . .a single, user-oriented, stand alone document containing all plans, schedules, procedures, and DARCOM/gaining command signed agreements on actions necessary to successfully deprocess, deploy, and sustain the equipment being fielded." (28)

A key element of the MFP and the new DARCOM fielding concept is the DARCOM/USER fielding agreement. The user is expected to provide input to the planning process "citing unique situations and problems of his command". After coordination and negotiation, detailed checklists will be prepared of all DARCOM and user actions necessary to the fielding. These checklists will be in the MFP and will be "signed-off" by the opposite parties after, and to signify, successful materiel fielding. The MFP process is outlined in the lower section of Figure 4; MFP and MSP formats are shown in Figure 5.

Part E. Verification of Logistic Supportability

The Logistics Evaluation Agency (LEA) has the responsibility to . . . exercise

". . .surveillance over . . . logistic supportability of developmental and non-developmental materiel systems for general use by the Army." (22; 1-2)

LEA acts as the logistician member of In-Process Reviews (IPR's) (for HQDA)

MISSION SUPPORT PLAN

- I. Using units in command (number and type)
- II. Authorization levels by unit, for each end item.
- III. DSU's (unit designation and address).
- IV. GSU's
- V. Theatre depot
- VI. Supported density (for each support element).
- VII. Initial provisioning option\*

26

- I. Introduction
- II. End item/ weapon system description.
- III. Logistics support command and control.
- IV. System support details
  - A. Support and test equipment.
  - B. Supply support
  - C. Transportation and handling
  - D. Technical data
  - E. Facilities
  - F. Personnel and training
- V. DARCOM commitment
- VI. Support required from the gaining command
- VII. Summary
- VIII. Appendices (Includes a "Table of Contents";  
DARCOM and MACOM checklists are the last  
two appendices.)

\*policy is for "pull shipment". MACOM may also/  
alternatively choose "Call fwd shpt" or "Sup-  
ply Spt Pkg".

MATERIEL FIELDING PLAN

- I. Introduction
- II. End item/ weapon system description.
- III. Logistics support command and control.
- IV. System support details
  - A. Support and test equipment.
  - B. Supply support
  - C. Transportation and handling
  - D. Technical data
  - E. Facilities
  - F. Personnel and training
- V. DARCOM commitment
- VI. Support required from the gaining command
- VII. Summary
- VIII. Appendices (Includes a "Table of Contents";  
DARCOM and MACOM checklists are the last  
two appendices.)

FIGURE 5

MATERIEL DISTRIBUTION/DEPLOYMENT PLANNING FORMATS

and other program reviews in accordance with AR 70-1 (which explains IPR procedures). Annex D is an extract from AR 700-127 showing the critical milestones for verifying logistic support. Documents cited for LEA to review as part of their surveillance function include the DP, the BOIP and the ROC.

In addition to the HQDA verifications conducted by LEA, DARCOM has established internal review procedures called LOGCAP's - Logistics Command and Assessments of Projects. LOGCAP's are planned prior to DSARC/ASARC I, II, and III, and ninety to one hundred eighty days prior to initial employment. The latter LOGCAP will specifically address the status of materiel fielding planning for each MACOM (24; 18).

• • • • •

Having completed the planning and verifying logistics supportability before the production decision, the system is produced and deployed to each MACOM. How effective were the preparations? Why did problems exist? How can we improve procedures? Post-fielding assessment procedures are addressed in the next chapter.

CHAPTER VI  
POST-FIELDING ASSESSMENTS

There is no formal ILS planning assessment program for a new system at the DA level. There is no responsibility, procedure, or milestone for such a review discussed in AR 700-127. There is HQDA visibility of equipment Operational Readiness (OR) rates in each command; and there is always an open-channel between MACOM staffs and HQDA for the discussion of specific problems. But there is no identifiable attempt to systematically monitor and evaluate system deployments.

DARCOM Regulation 702-9 (25) describes an internal DARCOM assessment program, including two types: a proponent readiness command assessment, which may be with-or-without user participation, and a "Red team analysis" conducted independently by HQ, DARCOM (or AMMC). The assessments are programmed for within two years of system deployment, and at the one-half-life period for the system. Special assessments may also be conducted. Topics to be covered in the assessment are quite comprehensive.

It is noted that the DARCOM regulation gives no guidance on procedures for data collection. The system assessment for the 155 mm Howitzer, medium, SP, M109/M109A (29) utilized Equipment Improvement Reports (EIR), Field Maintenance Technicians (FMT), liaison visits, and a questionnaire sent to selected units. The Red Team report on that same system does not indicate whether on-the-ground data was used in that assessment. (HQ, DARCOM personnel indicate that field visits are usually limited, for these assessments, to one unit per MACOM.)

\* \* \* \* \*

This concludes the brief survey of the current system for manpower plan-

ning for new systems, and for the subsequent deployments and post-fielding assessments. An evaluation of this system will be presented in the next chapter as referenced to the problem areas discussed in Chapter II.

## CHAPTER VII

### AN EVALUATION

#### Part A.

This section is organized into the specific areas addressed in Chapters III-VI; and each area is reviewed in terms of problems discussed in Chapter II. The correlation is outlined in Figure 6. The premise is that actions taken properly in areas III-V should have precluded the problems indicated; or, that policy and/or procedure improvements may be needed; and, that a post-fielding assessment procedure should insure regular detection and feedback of such problems.

#### Part B. Manpower Requirements Planning - the Project Manager's Problem

Problems 1 and 5 (Figure 6) may be partially attributable to problems with Program Management Office (PMO) manpower requirements planning, but there is no direct evidence of problems with QQPRI/TOE/BOIP/MACRIT actions. More importantly, it is clear that the bulk of the manpower authorization problems (2,6,7,8) are not attributable to PMO inaction: as discussed in Chapters IV and V, planning for force programs (MACOM) and materiel fielding (MACOM and DARCOM) should resolve such problems. Hence the most significant feature of this segment of ILS planning and system development is that there is no direct correlation between this manpower planning and areas projected for deployment. Other, specific plans must be made to insure the adequacy of on-the-ground manning at the time of deployment. It should be emphasized that the Program Manager (PM) remains responsible for the system through deployment: thus, he should at least have visibility of the state of fielding preparations in his major planning document

PROBLEM	SITUATION*					APPLICABLE SYSTEM AREA**			
	1	2	3	4	5	III	IV	V	VI
1. Personnel out-of-phase with deployment.	x						x		x
2. Marginal personnel authorizations.	x			x			x		x
3. Fielding plan inadequate/omitted.	x		?	x			x		x
4. Mission support plan inadequate/omitted.	x	x	?	x			x		x
5. N.E.T. out-of-phase with deployment.	x				x		x		x
6. Manpower authorizations not programmed for systems deployment.		x					x		x
7. Manpower (and other) impacts not determined before changing subsystem maintenance support concept.		x					x		x
8. DSU manpower authorization needs not documented or reviewed over extended time period.		x					x		x

\* From Chapter II  
\*\* Chapters in this Report

FIGURE 6

MANPOWER PLANNING RECAPITULATION PROBLEMS

which is the Development Plan (DP). The lack of prescribed MACOM input to the DP (in AR 70-27) is seen as a contributing factor to the PM's general lack of awareness of manpower authorization problems affecting his deployments.

Finally, the regulations are not clear concerning the sequencing of actions necessary to assure effective MACOM budgeting for OMA resources necessary to support deployment, or for the MPA appropriation to have the proper distribution of military personnel to support deployment. With COA having cost estimating responsibility, without communication to or from MACOM's in the process, MACOM's apparently prepare their CBE's without the data on which the cost estimates were based. The program manager is considered responsible for his total program, including budgeting responsibility - but he appears to have little or no direct responsibility for the OMA (other than DARCOM requirements) and the MPA appropriations.

Recommendations:

1. That AR 70-27 be changed to add specific MACOM responsibilities to support Development Planning, and particularly to input applicable manpower data (for Part V) and financial (budget) data (for Part II). The need for MACOM input to Part VI, Plan for Logistical Support, also exists, but will be addressed in Part D below.
2. That MACOM's be provided the cost-estimating basis for Operating and Support Costs applicable to their area of operation on an annual basis during development. This will permit advanced planning and CBE consistency for the relevant budget years.

Part C. Force Programs, Budgets, and Operations - The Field Commander's Problem

Figure 6 indicates five problems from Chapter II are, in-part, attributable to deficiencies in procedure or execution in this segment of systems acquisition and employment. In these situations, manpower authorizations were possibly inadequate (problem 2, situations 1 and 5), not programmed (problem 6, situation 3), not checked before changing maintenance concepts (problem 7, situation 4), and not documented with the basis of need (problem 8, situation 5).

It is apparent that for at least two situations (1 and 3), MACOM logisticians were either receiving belated notice of system deployments, or they were unaware of the need to verify manpower authorization sufficiency as part of their planning. This is an inherent responsibility of the MACOM - not the PM. Note that the needed spaces in situation 3 were assigned to the MACOM and not the PM. Procedural limitations in this area include the absence of specific PM guidance and, for the MACOM logistian, incomplete regulatory procedures (AR 310-49 and AR 1-1) covering the area of force programming.

Independent of a specific system deployment, but related to any programmed deployment, is the need for MACOM periodic reviews of DSU manpower authorizations and workloads. In the DSU's cited in situation 5, responsible personnel (at all echelons) seemed unaware of this function and were specifically without apparent knowledge of the need to screen against MACRIT (AR 570-2), and to document capability assignments in Part I of the MTOE.

Recommendations:

1. MACOM logisticians should insure review of DSU (and other) manpower authorizations periodically and prior to each system deployment. MACRIT criteria and programmed workload (density) should be specifically considered. Procedures for force planning should be published for both the MACOM and the PM. (HQDA (ODCSOPS) personnel agree that nothing currently exists to guide the PM in this area, and that something is needed (5)).
2. Insure that current workload, as a per cent of full TOE, be documented for each DSU as required by TAADS User Procedures. Amend TAADS User Procedures to make the requirement for Part I, MTOE more explicit and clear. (HQDA (ODCSOPS) proponent action officers for AR 310-49 concur that the guidance can and will be clarified (5A).)

Part D. Materiel Fielding - The Bridge

Every situation discussed in Chapter II indicates some degree of failure in the materiel fielding/support planning process (see Figure 6). In reviewing the above chapter (Chapter V) on Materiel Fielding, two specific areas appear to merit improvement: pre-fielding assessments and the planning documentation for materiel fielding.

Pre-deployment logistic support assessments by HQDA (LEA) are held prior to the decision to enter full-scale production (see Annex D, para C-1b (3) which is an extract from AR 700-127). From the regulation, there is insufficient data available to assess the availability of resources to support the deployment in each MACOM:

<sup>9</sup>MACOM's have no responsibility for input to the Logistic Support Plan (22;1-2).

<sup>10</sup>There is no requirement for LEA to review the Materiel Fielding

Plan (MFP). (22; 1-1-2).

<sup>o</sup>There is no requirement to review manpower authorizations among the significant personnel and training milestones. (22; C-1).

And even if materiel fielding planning is deemed sufficient at the time of the production decision, the readiness of support at the time of deployment from one to three years hence is a completely different question.

(DARCOM LOGCAP's appear to fill this void somewhat, but the HQDA (DCSLOG) responsibility appears to require a DA decision point and review for deployment.)

The scope of the Materiel Fielding plan is sound, and appears to resolve many of the problems discussed in Chapter II. However, certain MFP aspects seem incomplete:

<sup>o</sup>In what form will MACOM's receive initial notification of a deployment schedule? (Ref 24 indicates a DARCOM letter, but gives no format; ref 21 indicates a MIDP I.) When will that notice be sent?

<sup>o</sup>Each MACOM needs an internal support plan oriented toward its subcommands. There appears to be no regulatory requirement for such a plan. (Hence, at least three instances where problems resulted from this shortfall were discussed in Chapter II.) The "lessons learned" report, discussed in situation #1, identified the absence of the required Mission Support Plan (AR 700-120). However, the MSP does not satisfy this stated purpose; it is only an input document for provisioning planning. Hence, for the MFP to rely on the input MSP and "other documents" (28), there is too much imprecision for the MACOM planning requirement. Specific formats and timing must be prescribed and correlated both with internal MACOM and MFP

planning needs.

<sup>o</sup>The MACOM plan and the MFP should include the detailed manpower analysis/needs for the relevant MOS in each supporting DSU in the planned areas of deployment. (This includes AMMH required - versus authorized for the specific density of the applicable equipment category.) The data should be added to the LSA data base.

<sup>o</sup>It is understood the MFP requirement is being added to AR 700-127 (8). The MFP and MACOM planning requirements should be explicitly detailed to serve as a guide to the DARCOM/MACOM staff officers who have to write them. Alternatively, there seems to be potential value in preparing a small planning handbook to assist the ILS/MFP/Log Spt planners in all commands.

<sup>o</sup>DARCOM/MACOM planning requirements seem to become increasingly relaxed with decreasing system complexity. This is reasonable, but care should be taken to insure a maintenance support plan of some degree for any change in support mission or concept. If the Maintenance Support Plan in AR 750-1 is being replaced by the MFP as indicated (24; 28) the MFP coverage needs to include the "lesser" - but more frequent - planning requirements.

Recommendations:

1. Strengthen pre-deployment logistic supportability assessments by HQDA by:

<sup>o</sup>Assigning MACOM's specific planning input responsibility (ref 22, para 1-8).

<sup>o</sup>Adding the MFP as a key data element for LEA's review (ref 22, para 1-8g (1)).

- Adding manpower authorizations to the significant personnel and training milestones (ref 22, para C-5).
- Adding additional assessment milestones for deployment to each MACOM (ref 22, para C-1b).

2. Add the following specific provisions to the Materiel Fielding Planning requirements (in ref 24 and planned for inclusion in ref 22):

- Specify format and timing of distribution-schedule notification to MACOM's; reconcile with AR 700-120 (MIDP I).
- Specify a specific MACOM planning requirement (format and timing) separately or jointly with a requirement for an MFP input; reconcile with the MSP in AR 700-120.
- Include manpower authorizations and the basis (comparing support density versus MACRIT in DSU's) as specific data elements in the MFP and MACOM support plans.
- Provide "handbook-detail" planning guidance for DARCOM/MACOM staff personnel.
- Insure MFP or MSP planning requirements for less-than-major system support changes.

#### Part E. Post-Fielding Assessments

As noted in Chapter VI, there is no regular documented HQDA system of assessment of materiel system planning for logistics development and deployment. Consequently, no one contacted in HQDA had detected the long-standing shortfall in manpower authorization rationale and documentation in EUSA DSU's (1)(3!)(4)(5)(8); and a special study team was required to collect the lessons learned data surrounding situation 1.

The absence of a standard, DA level program of assessment of major

system deployments is considered a significant shortfall in the Army acquisition process. Considering the responsibility of HQDA (DCSLOG) for the overall ILS program (10; 2-19), the considerable energies involved in the execution of the program, and the multitude of commands and agencies involved, it appears axiomatic that an ILS evaluation program is required.

The DARCOM assessment programs provide reasonable assessments of value to HQ DARCOM. Limitations of the DARCOM programs in their present forms, for use by HODA, include the absence of regular MACOM and TRADOC participation and analysis, the lack of a standard data collection system, the lack of standard feedback to the MACOM's and TRADOC (as well as ODCSLOG and LEA), and the natural bias of a DARCOM assessment.

Recommendations:

That a formal ILS evaluation program requirement be developed and documented in AR 700-127. Specific elements should include:

- ° LEA coordinator responsibility.
- ° An information feedback system -
  - °° From all MACOM's and DARCOM.
  - °° Concurrent reports to several users (MACOM's TRADOC, DARCOM, HQDA).
  - °° Data base to be extension of the Logistics Support Analysis data base.
  - °° Simple but comprehensive.
- ° Separation of MFP and other ILS functions.<sup>1</sup>

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<sup>1</sup>The orientation of the numerous ILS planning participants appears to provide for reasonable separation into these categories - which may assist the organization for assessment.

## CHAPTER VIII

### SUMMARY

The focus has been, for this analysis, on the user - the command which must operate the newly developed system, and especially on the supporting DSU which has the key role to both deployment and on-going support for the system.

Five specific situations were analyzed, with the specific objective of identifying manpower planning related problems.

In examining the manpower planning system, it was observed that there are critical disconnects in the ILS manpower planning process: logisticians don't talk to force planners; force planners don't always update and document authorization rationale as they should; pre-deployment reviews are weak in regards to manpower authorization and deployment planning planning as a whole; and the MFP process, to be added to AR 700-127, needs to be strengthened.

Specific regulatory improvements are proposed to correct these deficiencies. Among the more significant of these are the following:

◦ Current regulations lead the system developer to believe manpower planning is complete when QQPRI/BOIP/TOE planning is complete. Manpower planning within a Major Command (MACOM) is a MACOM responsibility; and MACOM DP (Development Plan) - input responsibilities should be added to AR 70-17 to expand PMO visibility of MACOM planning.

◦ Current guidelines (AR 700-120) for MACOM planning in support of system deployment are much too weak: the requisite Mission Support Plan (MSP) only gives provisioning-planning data. MACOM logistic staffs are not conducting timely coordination with force development staffs and/or effective review of support DSU authorization levels prior to system

deployments. A comprehensive MACOM planning requirement should be added to support internal MACOM requirements as well as Materiel Fielding Plan (MFP) input-requirements. (Materiel Fielding Planning, as a whole, has been a major shortfall in the situations reviewed. The MFP procedure, underway for about one year within DARCOM, appears promising and is pending addition to AR 700-127.)

<sup>o</sup>Pre-fielding assessments are performed without sufficient data, do not consider manpower authorization adequacy, and are untimely: deployment planning may be sufficient to support a production decision, but that is an inadequate basis to support a deployment decision to a MACOM possibly two years hence. Changes are recommended to AR 700-127 to add review of the MFP and manpower authorization data, and to add predeployment review milestones.

<sup>o</sup>A post-fielding ILS assessment program is also recommended as an essential ingredient for regular maintenance and upgrading of the ILS system by HQDA.

## APPENDIX A - DEFINITIONS AND ACRONYMS

### DEFINITIONS

1. MACOM - Major Army Command (e.g. USAREUR, EUSA, FORSCOM, TRADOC). MACOM's are proponents for TAADS with responsibility for developing and processing TAADS documents for subordinate units.
2. Authorized Level of Organization (ALO) - The numbered level based on a given percentage of required MTOE, at which a TOE type unit is organized. ALO reflects a comparison of the authorized and required columns of MTOE and designates the unit readiness level which is considered supportable with a matching REDCON. (Ref. AR 310-49)
3. Authorization Documents - TAADS authorization documents are HQDA or proponent approved records which reflect personnel and equipment requirements and authorizations for one or more units. The authorization documents also provide unit organizational information. Such documents are MTOE, TDA, JTA, and JTD. (Ref. AR 310-49)
4. Manpower - The personnel strength as expressed in terms of the number of men and women available to, or required by the Army. (Ref. AR 310-25)
5. Troop List - Shows the distribution of manpower, allocated by HQDA, among Major Army Command (MACOM) organizations. MACOM troop lists are submitted to HQDA for approval/update on a continuing basis as changes occur or are projected.
6. Allocated Manpower - Military and civilian manpower spaces authorized a MTOE/TDA proponent ~~by~~ manpower decisions. These decisions carry out or amend the manpower program published in the Program and Budget Guidance (PBG). Military manpower is allocated by identity, i.e., officer, warrant officer, and enlisted. Civilian manpower is allocated by direct hire, foreign national, and other categories subject to control. (Ref. AR 310-49)
7. Integrated Logistic Support (ILS) - A composite of all the support considerations necessary to insure the effective and economical support of a system for its life cycle. It is an integral part of all other aspects of system acquisition and operation. Integrated logistic support is characterized by harmony and coherence among all the logistic elements. The principal elements of ILS related to the overall system life cycle include:
  - a. The **maintenance** plan
  - b. Support and test equipment
  - c. Supply support
  - d. Transportation and handling
  - e. Technical data
  - f. Facilities
  - g. Personnel and training
  - h. Logistic support resource funds
  - i. Logistic support management information

ACRONYMS

1. AMMC - Army Maintenance Management Center.
2. AMMH - Annual Maintenance Man Hours.
3. ASL - Authorized Stockage List.
4. BOIP - Basis of Issue Plan.
5. CBE - Command Budget Estimate (AR 1-1).
6. C-E - Communications - Electronics.
7. COA - Comptroller of the Army.
8. DARCOM - Development and Readiness Command.
9. DCP - Decision Coordinating Paper.
10. DCSOPS - Deputy Chief of Staff for Operations and Plans.
11. DP - Development Plan.
12. DS - Direct Support.
13. DSU - Direct Support Unit.
14. DX-W - Direct Exchange Wholesale.
15. EIR - Equipment Improvement Report.
16. EUSA - Eighth United States Army.
17. FMT - Field Maintenance Technician.
18. HQDA - Headquarters, Department of Army (The abbreviation is usually followed, in parenthesis, with a specific staff agency designation.)
19. IOC - Initial Operational Capability.
20. IPCE - Independent Parametric Cost Estimate.
21. LCC - Life Cycle Cost.
22. LEA - Logistics Evaluation Agency.
23. LOGCAP - Logistic and Command Assessment of Projects.
24. LSA - Logistics Support Analysis.

25. LSP - Plan for Logistic Support.
26. MACRIT - Manpower Criteria.
27. MFP - Materiel Fielding Plan (DARCOM Sup 1 to AR 700-127).
28. MIDP - Major Item Distribution Plan.
29. MILPERCEN - Military Personnel Center.
30. MOS - Military Occupational Specialty (MOS).
31. MPA - Military Personnel, Army (Appropriation).
32. MRO - Materiel Release Order.
33. MSP - Mission Support Plan (AR 700-120).
34. MTOE - Modified Table of Organization and Equipment.
35. MWO - Modification Work Order.
36. NET - New Equipment Training (AR 71-5).
37. O & S - Operations and Support.
38. OMA - Operations and Maintenance, Army Appropriation.
39. OR - Operational Readiness.
40. PM - Project (or Program) Manager.
41. PMO - Project (or Program) Management Office.
42. POC - Point of Contact.
43. QQPRI - Quantitative and Qualitative Personnel Requirements Information (PQQPRI - Preliminary QQPRI).
44. R & D - Research and Development.
45. ROC - Required Operational Capability.
46. SOP - Standing Operating Procedure.
47. TAADS - The Army Authorization Document System.
48. TC - Type Classification.
49. TDA - Table of Distribution and Allowance.

50. TMDE - Test, Measurement, Diagnostic, Equipment.
51. TOE - Table of Organization and Equipment.
52. TRADOC - Training and Doctrine Command.
53. USAREUR - U. S. Army Europe.

APPENDIX B - LIST OF REFERENCES

INTERVIEWS

1. Aicken, Larry B., LTC, USA. Interview at the Pentagon (DAPE-PBA), 15 March 1977. LTC Aicken is an Action Officer in the ODCS PER Authorization Division which has the function of approving MTOES (per AR 10-5). He relates MTOE Review Standards as (1) taking the ALO as "given", and (2) without reference to Part I. Hence, the adequacy of the manning (quantity or quality) is not addressed; the currency of MTOE inclusion of consolidated TOE change instructions is the principal basis for review.
2. Dolfi, Eugene, COL, USA. Interview at HQ, DARCOM, Alexandria, Va., 11 Feb 77. Col Dolfi is the Assistant Director of ILS for Development and Deployment. He and his staff were helpful in explaining DARCOM ILS management, especially Log Support Analysis, Materiel Fielding and LOGCAB's.
3. Duggan, Walter and Hernik, Daniel. Interview at HQ DARCOM, 11 February 1977. These men have knowledge of the DARCOM post-fielding assessment program.
- 3A. Gardner, Robert W.. Interview at the Pentagon (DAMO-FDU), 17 February 1977. Mr. Gardner is the ODCSOPS Action Officer responsible for AR 310-49 (TAADS). He agrees that the current "TAADS User Procedures" and AR 310-49 are not completely clear on the requirement for Part I of the MTOE. The TAADS User Procedure update, to be published as AR 310-49-1: "Documentation, Procedures, and Processeses", will be modified to clarify that section. (As of 9 May 77, the draft AR 310-49-1 is being staffed with MACOM's.)
4. Mueller, Irvin H.. Interview at HQ MILPERCEN, DAPC-MSR, Alexandria, Va. Mr. Mueller is the MILPERCEN POC for Integrated Logistics Support, and was especially helpful in describing AR 611-1 provisions for MOS decisions in system development.
5. O'Meara, Patrick B., LTC, USA. Interview at the Pentagon, 25 March 1977. LTC O'Meara is an HQDA (DCSOPS) Action Officer involved in MACOM force programming. He has knowledge of the problems identified in situation #3 (Chapter II). LTC O'Meara agrees that there is a lack of clear guidance for PM's (and others) in the area of force programming. (A forthcoming ODCSOPS regulation will reportedly replace and expand upon procedures which exist now in correspondence form.)
6. Summers, Noel B. Jr.. Interview at the Pentagon, 4 March 1977. Mr. Summers is a key Action Officer in HQDA (COA) involved with cost analysis policies, cost analysis of Army system developments, and the program to develop an O & S Cost Management Information System (MIS).

7. Thomassy, F. A., LTC, USA; Lambert, J. V., LTC, USA; and staff members at HQ, 19th Spt Bde and HQ, EUSA. Interviews in Korea (Pyontaek, Taegu, and Seoul) throughout 1976.  
LTC Thomassy has been the Commander, 227th Maintenance Battalion from June 1976 to the present. LTC Lambert was the Commander, 194th Maintenance Battalion from December 1975 to January 1977. These men have first hand knowledge of the problems of balancing manpower resources and workload at the DSU level. LTC Thomassy can relate the problems encountered in trying to reconstruct a basis for authorizations in the absence of documentation; and both can discuss situation 2, 4, and 5 (Chapter II).
8. Wood, Anthony, LTC, USA. Interview at the Pentagon, 17 February 1977.  
LTC Woods is the HQDA (DCSLOG) Action Officer for ILS and AR 700-127. He has knowledge of the problems identified in situation #1 (Chapter II).

#### ARMY REGULATIONS

9. AR 1-1 Planning, Programming, and Budgeting Within the Department of the Army.
10. AR 10-5 Organization and Functions - Department of the Army.
11. AR 11-8 The Army Cost Analysis Program.
12. AR 70-1 Army Research, Development and Acquisition.
13. AR 70-17 System (Project) Product - Management.
14. AR 70-27 Development Plan/Decision Coordinating Paper/Program Memorandum.
15. AR 71-2 Basis of Issue Plan.
16. AR 71-5 Introduction of New or Modified Systems/Equipment.
17. AR 310-31 Management System for Tables of Organization and Equipment (the TOE System).
18. AR 310-49 The Army Authorization Document System (TAADS).
19. AR 611-1 MOS Development and Implementation.
20. AR 570-2 Organization and equipment Authorization Tables - Personnel.
21. AR 700-120 Materiel Distribution Management.
22. AR 700-127 Integrated Logistic Support.
23. AR 750-1 Army Materiel Maintenance Concepts and Policies.

DARCOM PUBLICATIONS

24. DARCOM Sup 1 to AR 700-127.
25. DARCOM Reg 702-9 System Assessment Program.
26. AMCP 750-16 AMC Guide to Logistics Support Analysis.
27. DARCOM Reg \_\_\_\_\_ Logistics Command Assessment of Projects (LOGCAP) (Draft).
28. Briefing: Materiel Fielding. HQ DARCOM, February 1977.
29. System Assessment for Howitzer, Medium, Self-propelled 155 mm, M109/M109A1. HQ, ARMCOM, 18 November 1976.
30. Red Team Analysis of M109/M109A1 Howitzer Report # USAMMC-RTA-27. USAMMC, Lexington, Ky., December 1976.

Miscellaneous Documents

31. Milliner, James E., MAJ, USA. Transition From Production to Deployment: (Program Office Responsibilities). DSMC, Ft. Belvoir, Va. PMC Report 76-2. November 1976.
32. DODD 4100.35 Development of Integrated Logistic Support for Systems/ Equipments.
33. DA Pamphlets 11-2, 3, 4, and 5. Materiel System cost guides and documentation standards: 11-2 Research and Development Cost Guide for Materiel Systems; 11-3 Investment Cost Guide; 11-4 Operating and Support Guide; 11-5 Standards for Presentation and Documentation of Life Cycle Costs Estimates for Army Materiel Systems.
34. DA Pamphlet 11-25 Life Cycle System Management Model for Army Systems.
35. FM 29-23, Direct Support Maintenance Operations (Nondivisional).
36. TOE 29-208H Maintenance Company, Forward, Direct Support.
37. CSR 11-24 Force Structure Procedures.
38. Army Plan to Establish O & S Cost Goals for Selected Materiel Systems (Revision 1), 28 January 1977. Directorate of Cost Analysis, Comptroller of the Army; DCA-R-49.

APPENDIX C

TOE 29-208H (Extract)  
MAINTENANCE COMPANY, REAR, DIRECT SUPPORT

u/r  
\*TOE 29-208H

TABLE OF ORGANIZATION )  
AND EQUIPMENT )  
NUMBER 29-208H )

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, D. C., 30 January 1974

01, 2, 3, 4, 5, 6,

MAINTENANCE COMPANY, REAR, DIRECT SUPPORT

Designation: Maintenance Company (Rear, Direct  
Support)

Section		Page
I.	General:	
	Organization -----	1
	Equipment -----	4
II.	Personnel Allowances:	
	Distribution -----	8
	Recapitulation -----	12
III.	Remarks -----	15
	Equipment Allowances:	
	Distribution -----	16
Remarks -----	25	
	Recapitulation -----	28

SECTION I

GENERAL

ORGANIZATION

1. MISSION. To provide direct support maintenance and repair parts supply for mechanical, armament, communications, construction, generator, office machine, refrigeration, chemical, topographic, and meteorological equipment to nondivisional units in the Corps area commensurate with stated capabilities.

2. ASSIGNMENT. To the Corps Support Command (COSCOM). Normally attached to Headquarters and Headquarters Detachment, Direct Support, Maintenance Battalion, TOE 29-136.

3. CAPABILITIES. a. This unit:

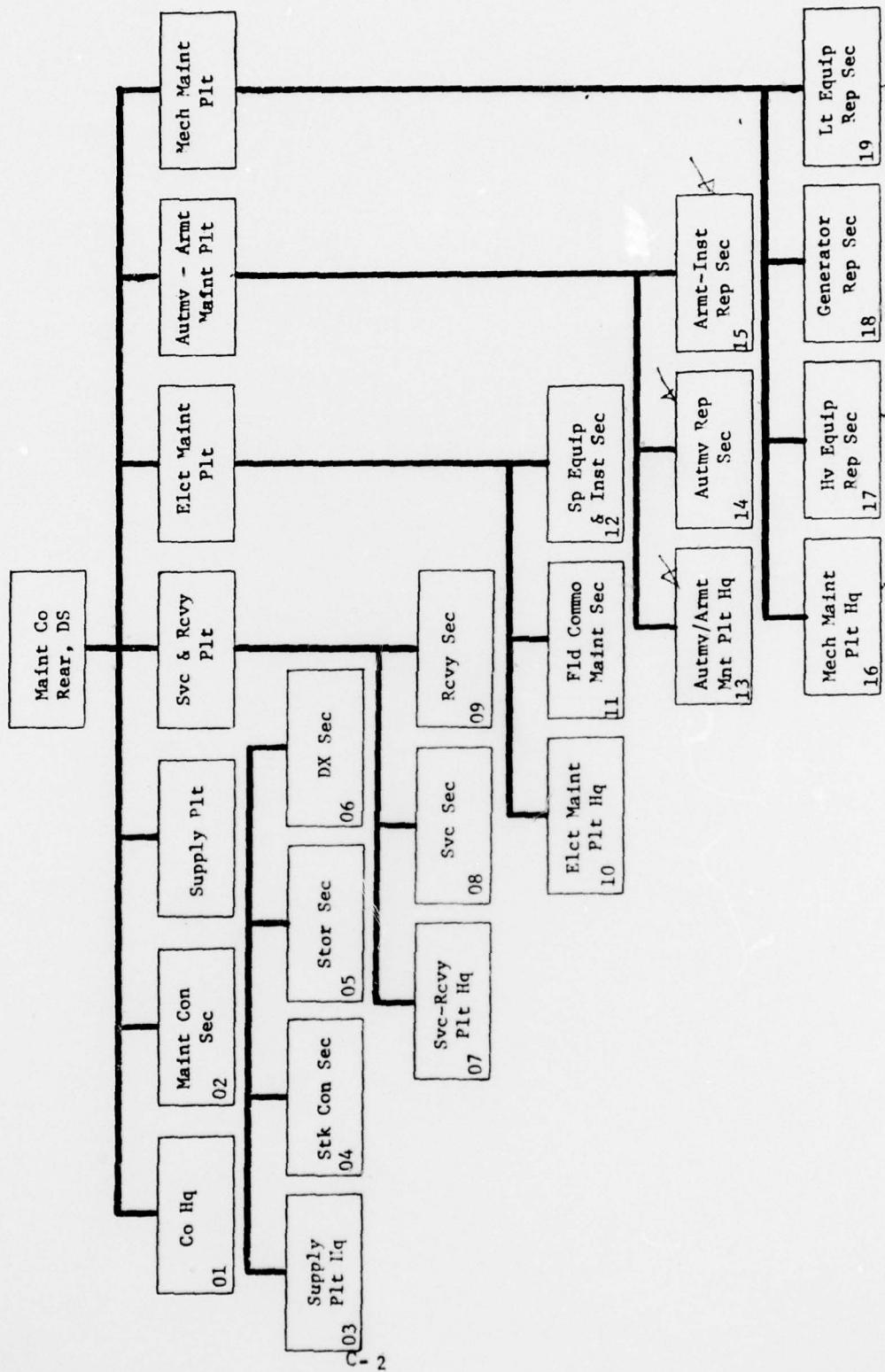
(1) Provides the following annual manhours of productive maintenance (approximate):

✓ \*TOE 29-208G, 11 October 1968, will be rescinded whtn units are no longer organized thereunder.

C-1 RETURN TO ARMY LIBRARY  
ROOM 1 A 518 PENTAGON

TOE 29-208H

MAINTENANCE COMPANY, REAR, DIRECT SUPPORT



	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>
Tabulator Equipment Repair	2,700	2,700	2,700
Automotive Repair	91,800	89,100	81,000
Engineer Equipment Repair	51,300	48,600	48,600
Power Generation Equipment Repair	81,000	75,600	75,600
QM Light Equipment Repqir	13,500	10,800	10,800
QM Heavy Equipment Repair	10,800	10,800	10,800
Small Arms Repair	8,100	5,400	5,400
Canvas Repair	10,800	10,800	8,100
Metalworking	24,300	24,300	24,300
Fire Control Instrument Repair	2,700	2,700	2,700
Refrigeration Repair	24,300	24,300	24,300
Communications Equipment Repair	51,300	45,900	45,900
Office Machine Repair	8,100	8,100	8,100
Tank Turret Repair	8,100	8,100	5,400
Chemical Equipment Repair	10,800	8,100	8,100
Topographic Equipment Repair	2,700	2,700	2,700
Meteorological Equipment Repair	2,700	2,700	2,700
Radar Repair	2,700	2,700	2,700
Electrical & Electronic Devices Repair	27,000	27,000	21,600
Camera Repair	2,700	2,700	2,700
Fire Control Computer Repair	2,700	2,700	
Reproduction Equipment Repair	2,700	2,700	2,700

NOTE: Availability criteria based on category II unit, allowing 2700 annual productive manhours per repairman.

- (2) Operates a direct exchange service for selected items.
- (3) Provides backup maintenance support for the maintenance companies, forward, direct support.
- (4) Receives, stores and issues approximately 7,000 line items of repair parts.
- (5) Provides limited vehicular recovery assistance to supported units.
- (6) Provides Direct Support maintenance services on operational readiness float items.
  - b. The columns under Levels 2 and 3 adapt this table for capabilities commensurate with the density of materiel authorized supported units at those levels.
  - c. This unit is not adaptable to Type B organization.

TOE 29-208H

d. The columns designated by Levels 1 through 3 are designed to relate to the categories established by AR 220-1 and AR 135-8, Unit Readiness.

e. This unit is dependent upon:

(1) The appropriate elements of the COSCOM for medical, finance and personnel administration services.

(2) Headquarters and Headquarters Detachment, Maintenance Direct Support/General Support Battalion, TOE 29-136, for religious services.

(3) Organizational Maintenance Teams, TOE 29-600, for organizational maintenance of operational readiness float items.

f. Augmentation increases the capabilities of this unit to the extent provided by the augmentation personnel and equipment.

g. Individuals of this organization can engage in effective, coordinated defense of the unit's area or installation.

h. This unit is capable of performing organizational maintenance on organic equipment.

4. BASIS OF ALLOCATION. Normally five per corps. Specific allocation of this unit must be determined by supported structure with due consideration to units capabilities as shown in paragraph 3a(1) above.

5. CATEGORY. This unit is designated a category II unit. (For unit categories, see AR 310-25.)

6. MOBILITY. This unit is:

a. Twenty-one percent mobile in organic vehicles.

b. One hundred percent transportable in USAF aircraft.

#### EQUIPMENT

7. This table is prepared in accordance with AR 310-series and, together with documents listed in paragraph 10, is the authority to requisition and issue all items listed herein in accordance with Department of the Army directives. Chapter 12, AR 725-1 has been considered and changes to equipment have been made accordingly.

8. In accordance with pertinent Department of the Army and/or theater documents, units are authorized the following (definition of terms in accordance with AR 310-25 as amplified by SB 38-26):

APPENDIX D

AR 700-127 (Extract)  
INTEGRATED LOGISTICS SUPPORT  
(Appendix C - Critical Milestones  
For Verifying Logistic Support.)

## APPENDIX C

## CRITICAL MILESTONES FOR VERIFYING LOGISTIC SUPPORT

**C-1.** Preparation or modification of section VI of the ODP and DP prior to—

- a. Entry into the validation phase.
- b. Decision reviews to enter—
  - (1) Full-scale development
  - (2) Initial low rate production
  - (3) Full-scale production

(The requirement for action on section VI is not negated if any review is omitted during the materiel acquisition process.)

**C-2.** Preparation of logistic input to—

- a. LOA, ROC, or LR.
- b. Concept formulation package.
- c. Sections II through V of the ODP/DP.
- d. DT and OT plans.
- e. Requests for proposal.

**C-3.** Completion of maintenance physical tear-down, if applicable. (No later than DT II.)

**C-4.** On-Site availability of maintenance test support package consisting of—

a. Equipment publications (draft).

b. Repair parts.

c. Support and test equipment.

d. Trained operator and maintenance personnel.

e. Maintenance facilities.

**C-5.** Significant personnel and training milestones:

- a. Completion of new equipment training (AR 71-5).

- b. Submission of advanced resident training plans (AR 71-5).

- c. Dispatch of new equipment training teams (AR 71-5).

- d. Submission of QQPRI (AR 611-1).

- e. Availability of training devices.

- f. MOS training initiated.

**C-6.** Transportability approval by MTMC (AR 70-44).

**C-7.** Availability of provisioning data.

**C-8.** Availability for issue of support elements.